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THE MYSTICAL AS A PSYCHOLOGICAL CONCEPT

CURRENT usage of the term "mysticism" is unprecise and inconsistent except at one point. Speculative or epistemological mysticism is well understood as a theory of immediacy, and specifically such immediacy as causes the finite search to cease because the other is no longer another. Professor Royce has given us a searching analysis of this epistemology,[1] but his plan did not require an investigation of the genesis of the experiences out of which speculative mysticism grows. Professor James names four marks of the mystical state—ineffability, noetic quality, transiency, and passivity[2]—but his attention, in turn, was upon the value rather than upon the genesis of the experience, and consequently the marks that he enumerates are borrowed without thorough criticism from the unscientific introspection of the mystic himself. Leuba, Murisier, Delacroix, and others have worked out either special aspects of mysticism or the psychology of a particular group of mystics, and in these studies there are many illuminating glimpses into the broad field of mysticism as a whole. Yet I know of no attempt to run a line around this broad field so as to determine its boundaries, nor have we, so to speak, a general physiography of it. The content and value of the mystical experience rather than its form and genesis have been the favorite topics of investigation.[3] As a result, psychologists feel free to use the term mysticism in any sense that suits their incidental purposes,[4] and even careful writers on religion define it with an arbitrariness that practically ignores both psychol-

[1] "The World and the Individual," Vol. I., Lectures II., IV., V.

[2] "Varieties of Religious Experience," pp. 380 ff.

[3] I have attempted elsewhere to show that the merely formal conditions of ecstasy have much to do with its content. See "The Sources of the Mystical Revelation," *Hibbert Journal*, January, 1908, pp. 359–372.

[4] For example, mysticism is defined as "the doctrine that events in the object-world, physical events as well as psychical, are not always subject to natural law, but are sometimes influenced in a manner that is fundamentally inexplicable from the standpoint of the causal conception of nature." Münsterberg, "Grundzüge der Psychologie," I., pp. 170 ff.

ogy and history.[5] No wonder that popular speech plays fast and loose with the term, and that the religious world is in confusion as to the whole notion of religious experience.

How can we hope to make any approach toward precision in the use of this term, or secure a basis for a general evaluation of religious mysticism, unless we first make a general survey of the facts that seem to call for a common name? Such a survey ought to show whether or not any definite psychological fact or notion lies at the basis of the problem, and it will certainly do this if it reveals the genetic relationships of different types of mysticism.

As a rough attempt at such a survey, a tabular view of "the mystical" is herewith submitted. In the main it will explain itself. It takes its start from what is universally recognized as completely mystical, namely, religious ecstasy, together with the theory of it and the practise that seeks to realize it. In the next place, certain less extreme experiences, common to the great mystics on the road toward ecstasy, and to a multitude of those who never reach ecstasy at all, fall into place as mystical in the same sense as ecstasy itself. A convenient name for them is "inspirations." These, in turn, give rise to a belief and a practise. We next notice that experiences of the same psychological type take place outside of what is conventionally called religion. We might, indeed, extend the term inspiration beyond the religious usage. For spiritism gives us supposed inspiration by a deceased human being, telepathy by a living one, and clairvoyance and premonition by, perhaps, the nature of things. A common term for the phenomena in this field has, however, come into general use, namely, "psychical phenomena." For the practise of non-religious inspirations we have the general term "mediumship." Finally, looking to the historical genesis of these practises, we come upon the primitive root of the whole in automatic experiences interpreted as "possession," and cultivated by the "medicine man," the shaman, or the "witch doctor."

Complete enumeration is, of course, not intended, but only suggestion of the whole through typical classes. Nor is the table intended as an exhaustive division into mutually exclusive classes. The table does, however, group together phenomena, beliefs, and practises that are psychologically coherent, and it indicates the true psychical and historical genesis of the more developed practises. The psychical genesis of the whole is the duality, which is yet im-

[5] Mysticism is the "attitude of mind which divines and moves toward the spiritual in the common things of life." F. Granger, "The Soul of a Christian," p. 41. "Mysticism is the love of God." W. R. Inge, "Studies of English Mystics," p. 37.

mediacy, that appears when automatic control occurs. Here is the psychical root of the whole of mysticism.[7]

A Survey of the Mystical

The Experience	Supposed Source or Content	The Deliberate Practise
The supreme mystical state (religious): Either Ecstasy or Permanent Automatism Supposed form: Complete absorption or loss of personality. Supposed content: Either zero or infinity. But these are only limiting notions.	God Tendency toward pantheistic conception	*The attempt to realize God as the all:* Yoga The Christian "Via Negativa" Christian Science and New Thought The method: Narrowing of attention and auto-suggestion.
Incomplete mystical states (religious): Inspirations The experience of the seer; Sense of guidance or of illumination;[6] Assurance or the witness of the spirit; Sense of divine communion; "Sense of presence"; "Anesthetic revelation"; "Cosmic consciousness." The form: Partial abeyance of self-control in mental functions. Occasionally, loss of muscular control also. The content: Somewhat specific ideas which commonly seem to be self-evidently or infallibly true.	God or Gods Generally conceived as transcendent	*Attempts to realize the God on special occasions or for special ends:* Oracles and Other Methods of Penetrating the Unknown Some Forms of Revivalism Holiness Movements and Allied Practises Divine Healing Transubstantiation The method: Surrender or quiescence of will, suggestion (largely social).
Incomplete mystical states other than religious: "Psychic Phenomena" This term includes supposed spirit-communication, telepathy, clairvoyance, premonition, etc.	A Spirit, A Living Man, or The Nature of Things	*Attempts to take advantage of supposed occult connections:* Mediumship in its Various Forms
The primitive root of the whole: Automatic Experiences Interpreted as Possession	Spirits	*Attempts to control spirits:* Certain Parts of Magic Shamanism

[6] Here belong conversion experiences in which the subject feels that his questions are decided for him, or that his attitudes and decisions are wrought within him by God, or Christ, or the Holy Spirit.

[7] It is not necessary for my purpose to maintain that a sense of immediacy to an other appears in connection with all automatisms, as, for instance, mul-

Leaving the details of the survey to explain themselves, I shall now offer some comments with a view to rendering still more precise the general character of the whole mystical movement.

1. The contrast between the mystical and the non-mystical upon which attention has chiefly centered concerns cognition. But certain phases of this contrast have been neglected. In the intellectual analysis that we call science, the mind is highly self-controlled (whatever self-control may ultimately be); it is thus that science seeks to reduce the less known to terms of the better known, the extraordinary to the ordinary, the complex and obscure to the simple and obvious. Mysticism, on the other hand, tends to reverse this process at every point. Having surrendered self-control, the mystical consciousness can not be analytical or critical. It deals with wholes rather than their elements, with conclusions rather than grounds; it reads the ordinary and simple in terms of the extraordinary, the complex, the undefined; in general it affirms, but does not deny. It is in strict accord with this, that when a mystic undertakes to philosophize, he is almost certain to pursue an *a priori* method and to seek alliance with one or other of the great speculative systems which find it easy to understand being in its totality, but hard to grasp its parts.

2. While the debate between the mystic and his opponent has almost always moved within the sphere of epistemology toward the concept of substance, another aspect of mysticism, and a not less debatable one, has been relatively unnoticed. Corresponding to the contrast between self-control and automatic control in cognition, there is a radical opposition in the sphere of values and purposes. On the one hand, we have values analyzed, approved, worked for in the full light of the individualized consciousness; on the other hand, we have values hit upon more or less fitfully in conditions of automatic control.

3. If we ask what valuation attitudes are, as a matter of fact, characteristic of automatic control, we come upon what appears to be a paradox. At first thought we should expect a reversion toward primitive instinctive evaluations. In demon-possession, in fact, we have such a reversion at times, and it is well known that the primal instinct of sex plays a prominent part in Christian mysticism. It is likewise true that the mystical state is less differentiated than the self-controlled state. In spite of all this, however, the practises

tiple personality. Yet such a thesis could make out a better case for itself than is commonly supposed. The investigation of multiple personality, post-hypnotic suggestion, hypnotic amnesia, etc., has naturally fixed attention first of all upon the contrast, the apparent duality. But it would be easy to show that, ordinarily, and perhaps always, this duality does not involve psychic discontinuity, but, on the contrary, involves a sense of immediacy to an other.

included in our survey make, all in all, for the maintenance of acquired moral standards. This is one chief source of their attractiveness, as it is also a ground of defense. How is it, then, that practises that surrender self-control are nevertheless so morally controlled? The reason is, that when self-conscious or rational control, with its tendency toward variation from type, ceases, its place is taken by social control. The habitual, the commonplace, the socially expected, is what ordinarily comes to the surface. The oracle, the yogi, the revivalist, all stand for the conservation of ethical standards. Thus, in spite of the fact that the *method* of mysticism is antithetical to moral self-guidance, its *product* is ethically conservative.

4. This fact has had momentous historical consequences. Whenever a rationalistic or scientific movement is seen to be undermining dogma, religion takes refuge in mysticism. This is not at all because mysticism has any peculiar competency in the interpretation of anything, but because it can be relied upon to conserve socially approved values, and because it promises an immediate experience of the values that are threatened. Here is the deepest root of supernaturalism. Its strength lies not in any articulate inspirations that it has to offer—for the most part it has at present no fresh inspirations of its own, but relies upon the inspirations of thousands of years ago—but in its promise of protection against threatened changes in moral values. For moral progress, therefore, we have to look elsewhere than to mysticism. Between mysticism and reflective morality, with its ever-repeated break with customary standards, there is a fundamental antithesis, namely, that between the highly individualized, self-controlled ethical will and automatic control which, as far as it goes, is preindividual and subindividual. When, therefore, religion becomes strongly ethical, mysticism becomes a hindrance, and at last, corresponding to the religious reaction from rationalism toward mysticism, we have a religious reaction from mysticism toward some sort of ethically progressive faith. Paul himself, mystic as he was, was able to point out "a still more excellent way," and the churches of to-day are moving out of mysticism toward this way of socially regenerating love.

5. Therefore, the identification of mysticism with religiousness in general goes astray. It is false at many points. For not only does ethically progressive religion break with the authority claimed for automatic inspirations; and not only is the development of individuality opposed to automatic control; but also, between religious mysticism, on the one hand, and spiritism, telepathy, and mediumship in general, there is no dividing line. The psychical process is the same, the ground of certainty is the same, the whole forms a

unit which constitutes the only distinctive basis for a definition of mysticism.

6. The mystical, then, is simply the automatic in general interpreted as ontological immediacy to any being whatever, divine, human, or subhuman. In strictness, the mystical is not a psychological term at all, since ontological interpretation is of its essence. Perhaps only a few psychologists are incautious at this point, but certainly the world of culture at the present day does sorely need to understand: *First,* That there is no distinctive "mystical experience," because the psychical factor in mysticism, the automatic, is entirely general, and not a kind of experience with distinctive content of its own. *Second,* That mysticism is not to be identified with religion or with any part of it. It is not true that all religion is mystical, or that all mysticism is religious.

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THE BASES FOR GENERALIZATIONS IN SCIENTIFIC METHODS

IN that all true induction involves generalizing on the basis of particulars, the question of the conditions under which various numbers of particulars are required for a generalization stands as a fundamental question in discussing inductive methods. There is no doubt that at times we are justified in making "sweeping statements" on small evidence, statements as to the quality of a certain brand of note-paper, for instance, on the evidence of a single small square; whereas at other times we ask for a more complete test, for a sample, perhaps, from the middle, the top, and the bottom of a barrel of apples, or for the examination of some hundreds of Italian immigrants, before we are ready to come to a conclusion. Several considerations seem to affect the investigator's judgment of the sufficient evidence for a generalization. The following classification attempts to group these in such wise as to suggest the questions one might well ask oneself before undertaking an investigation or criticizing a piece of work:

A. Only part of the field discussed is investigated.
- I. The field shows uniformity
  - 1. Over the field as a whole.
    - *a.* Absolute.
      - (1) Complete isolation possible by direct means.
      - (2) Complete isolation possible by indirect means.
      - (3) Delicate technique calls for repetition of experiments.
    - *b.* General uniformity.

(1), (2), (3), as under *a*.

2. Within the several distinct portions of the field.
a and *b*, as under 1.

II. The field investigated shows relatively no uniformity.

1. Standard conditions, variations quantitive.

2. Conditions non-standard, or variations non-quantitive.

B. Whole field investigated.

When the total field *B*, is tested, either descriptions or complete inductions are drawn up. In such a case no real generalization is made; thus the interest of this paper centers in class *A*.

The most marked contrast within the field of generalization is between those cases where we draw our conclusions with apparently reckless trust in a few examples and those where we build our foundations very nearly as wide as the superstructure. Roughly, the difference is between the more exact sciences and the use of statistical methods. The difference itself seems to rest on the presence or absence of our confidence in the representative character of the different examples. When the field of investigation is uniform, as in the instance of the note-paper mentioned above, a small piece is enough to test, for we believe all paper will take the ink in the same way. On the other hand, if the field is as various as the physical condition of the school children of New York city, a conclusion to be of real value must rest on the study of some "quorum" of cases, the more the better.

There may be uniformity over the field investigated as a whole, or within the several distinct portions of it; that is, we may work with representatives at large or by districts. Number 2 under I. covers the latter case, that where we work with classes showing distinct kinds within them. We then select one example or a group of examples of each kind to test. The single example is no longer enough, but the group tested represents all divisions of the total field. Pasteur used this method in the first of his work with the disease pébrine.[1] One part of scientific investigation which calls most for judgment and wide knowledge centers around the question of the place of uniformity, the parts to be sampled, if one is to win a fair idea of the quality of,—let us say, a boatload of grain. Sometimes this method of using a carefully selected group is called into play where the investigator's interest is in pointing out or studying the very variation itself, in showing, for instance, that air in the Alps has fewer germs than air in the country, and that again than air in the city streets; or in determining the relative virulence of a medula oblongata infected with rabies,

[1] "The Life of Pasteur," R. Vallary-Raelot (McClure, Phillips, & Co., New York, 1906), pp. 118, 120.

as it dries one, two, or three days. In all these cases, a group of examples representing each of the different kinds found in the class as a whole gives the material to work upon.

Where such uniformity as is found belongs to the field as a whole (I., 1), it is true that we also sometimes call for a small group instead of a single example in testing for the nature of that field, but such a group is very different, from a logical point of view, from the selected group. Where complexity of condition, or ignorance, makes it impossible to be certain of discriminating the eccentric individual, several are tested—three, ten, or twenty guinea-pigs are inoculated—instead of only one. There is no selection here, variation is generally and vaguely accepted as possible, not specifically placed. Each example is believed representative of the whole, if a few examples agree. The headings *a* and *b* indicate the distinction in method between taking one example and such a small group. In testing the kinds of a field (I., 2), either of the two methods will be applied to the test for each kind, according to conditions. That is, we have subheadings *a* and *b* under 2 also.

The lowest subdivisions under I., the bracketed numerals, draw distinctions of method on a new basis, that of the character of the technique used in experimenting. It is frequently necessary to bring into play a number of examples of a field in question, not because no one of them is representative of the field, but because we have at our command only very complicated means for learning what we want to learn. In determining the charge of an electric corpuscle, for instance, it would be satisfactory to rest with the evidence of a single corpuscle, could it be gained directly. As things are, it is necessary to pass a charge of some strength through moist air, measure the quantity of water precipitated and the size of a single drop, and so compute the charge of a single corpuscle.[2] The reason for bringing into play in this case a much larger amount of electricity than is necessary to represent the field is that our instruments are not fine enough to deal with less. In biological work the number of animals used is multiplied similarly. A normal dog is inoculated with the virus every time that a refractory one is tested, because we have no other means of being sure of the condition of the virus. The conditions that lead to this use of a larger portion of the field because of imperfect technique, I have called those for indirect isolation. The conditions grouped under (3) are similar. Here we multiply our tests, perhaps because of the chance of breakage through a long experiment, or of some slip on our part in very delicate measurements or tests. Most experiments are, apparently, repeated

[2] "The New Knowledge," R. K. Duncan, Part III., Chap. VII.

for this reason before they are announced. In Pasteur's life, however, one instance is given where a single test was enough, that is, one instance of the method (1).[3] So far as I can understand it, the term "control experiment" is used not only for the side test called for under (2) and (3), but also for the multiple experiment, *b*. For the purposes of logic, we might wish it were kept for these subsidiary experiments required by the nature of the technique, for certainly that brings a new factor into play. This element enters, of course, to complicate the methods that fall under *b* and under 2 also.

When the field shows relatively no uniformity, the methods are quite different. The only distinction that I can find to note there is that which gives rise to the use of an arbitrarily created representative or a kind of lay figure, such as an average, or a mean. These are used where the ground of variation is quantitative and the conditions that lead to it relatively standard (II., 1). Much of the work done in computing the mean is, indeed, concerned with making the conditions standard. The nature and difficulties of this method are shown in the investigations of the effect of overcrowding upon the development of the school children of New York. So long as the conditions that determine variation are believed standard, that is, in play in all the groups compared, the use of averages to represent the different groups is legitimate, but under the suggestion that difference in race varied those conditions in part, belief in the genuineness of that representation withers away.

In such a case (II., 2) the methods left to use are those under *B*, with an important addition. Graphs, classifications (such as this tries to be), and tables are often drawn up for a whole field on the basis of a portion, usually a large portion, of that field. A step beyond complete induction is thus taken, a step such as Mendeléef took when he predicted that any chemical elements found later would fit into his table of the periodic law.

It will be wholly false to the facts to give the impression that I find the methods used in scientific investigations slip unquestionably and invariably under some one of these headings. There are what may be called transition methods at play; as, perhaps, where one may be but half satisfied with the method of selected groups is to be abandoned for a representative at large, one tests two or three only, and not all the "kinds" within the field. Still I find that the distinctions noted here mark the main points to consider in forming a judgment of the amount of evidence needed if one is to generalize safely about a given field.

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[3] *Loc. cit.*, p. 39.

DISCUSSION

REPLY TO PROFESSOR FRAME

ACCURATE criticism is an invaluable safeguard and often can be received profitably in silence. Perhaps silence is a safe resort also where criticism is contrary to fact and tinged with prejudice, in accordance with a principle enunciated by Henry Ward Beecher that upon meeting in the road an animal of the species *mephitis mephitica* it is the better part of valor to go around him and surrender the middle of the road.

I wish, however, to make this belated protest against the statements of Professor J. A. Frame[1] regarding the writer's "Education and Problems of the Protestant Ministry"; the latter is a reprint of a condensed series of articles which it is hoped may appear eventually in more elaborate and carefully edited form. This delayed protest is written at the suggestion of friends, who urge that the matter should not be ignored. More than one of these friends are progressive seminarians.

Professor Frame is exercised with reference to the incompetency of persons called upon to give their judgment regarding the duties and ideals of ministers. After the manner of disputants who rely upon humor rather than fact when cornered, he dubs these persons "experts" (his interpolation), and then proceeds to show that they are not experts. The reviewer totally failed to grasp the writer's evaluation of these witnesses, since a leading argument of the whole discussion is that the minister's activity is often circumscribed by the opinions and demands of conventional church-goers rather than by experts; that the unreasonable demands, whims, and theories represented by this group of church-goers, who are informed upon the subject in the conventional sense, usually handicap even a well-equipped and honest pastor. For such a minister the writer repeatedly expresses his respect and sympathy.

With fitting sarcasm our reviewer writes:

> In the treatment of the first point, there is a running comment upon the replies received from a hundred or more persons whose opinions were solicited in reference to the qualifications of the minister—intellectual, moral, and the like—and in reference to his pastoral duties—the matter of sermons, prayer, communion, baptism, marriage, etc. The suspicions one might have as to the competency of the witnesses are allayed in advance by the assurance that the persons "are informed upon this subject" (p. 9). It is interesting to note the disagreement among these experts. . . . While the reader who is actually engaged in the business of training college graduates for the pastorate is grateful for the opinions of these experts, he would have been still more grateful to them had they bothered to give reasons for their opinions.

[1] This JOURNAL, October 8, 1908, pp. 580, 582.

Our critic and philological judge affirms that he is engaged in the "business of training college graduates for the pastorate"; of course there are the hypercritical persons outside of seminaries who might affirm, in view of the enormous sums of money wasted in seminary endowments and property (which altogether are greater than law and medical endowments and property combined, and yet benefit only one fifth as many students, p. 58), as well as because of the mechanized methods of some seminaries, that his is a very poor kind of "business." Neglecting this digression, it is interesting to contrast with the statements above quoted the actual paragraphs referred to in the "Education and Problems of the Protestant Ministry," and some of the context, which I understand seminary experts in hermeneutics say it is not safe to omit in honest exegesis:

"Custom, that monster, custom, who all sense doth eat," feeds the minister; when unkind custom can not be ignored, it must be rebuked or conciliated. The whims of the populace, the unwritten code which places the minister at the service of the people day and night, the conventions regarding his habits, the conversation, amusements, dress, sermons, as well as the formal vows and creed, offer formidable influences for the lover of spiritual freedom to meet. Whether in the atmosphere of a self-assured radicalism or of iron-clad orthodoxy the minister must suffer where these factors exist; spontaneity crushed in him leaves little power to stimulate those who hear, and there results in the field of organized religion arid wastes of uniformity (p. 8). As constituted in age, sex, nationality, occupation, and religious preference, the group is fairly representative of American church-goers. A more than average type of intelligence is represented; numerous highly representative men, strangers to the author, responded with surprising promptness and care (p. 12). If an objector holds up his own ideal in contradiction to the content of this chapter, let him remember until he can bring to bear upon the problem more numerous testimonies than are presented in our small group, that the voices of more than a hundred persons, informed upon this subject, remain more instructive than the voice of but one man (p. 9). It is desirable to ascertain the individual experiences, ideas, and the conventional attitude of church-goers regarding the minister and the church, for these are the mental factors with which he actually deals. We can not cipher out all this *a priori*, and must collect it in burdensome, inductive fashion from persons to whom the problems are matters of living interest (p. 10).

Another parallel comparison of the review and the reviewed is relevant.

Says Mr. Frame:

The conclusion which the author draws from the possession of what he calls "a rude cross-section of the minds of a small group" amounts to little more than this: that the pastor is a valuable man in the social group and that he should be better trained.

Here are the actual conclusions, referred to in the above lines:

Abstracting and repeating the conclusions suggested by the material in this chapter we recapitulate in a few words:

(*a*) The ministerial profession has high present value and possibilities as a social group.

(*b*) The minister theoretically embodies the highest human ideals.

(*c*) In practise, he is forced to drudgery and humiliating restrictions.

(*d*) Abandonment of trivial, exacting, and of poverty-breeding labors imposed solely by custom and organizations should be undertaken by pastors, but with assumption of the burdens of new issues laid bare by science.

(*e*) Educational methods to promote intellectual longevity are demanded. Continued varied interests are equally important for efficiency and happiness.

(*f*) Admission to the ranks of religious and moral specialists should be made impossible to weaklings and parasites. The newly revealed responsibilities of the ministry require the best of men and better methods than now exist for their training (p. 53).

The undersigned returns thanks for the references mentioned with such delicacy and hesitancy; perhaps it might be profitable for him also to review the elusive details of philology, a modicum of which he once knew when he taught dead languages. In regard to the designation of his modest essay as a "book," the author regrets that a slip of the pen must have caused him to neglect the substitution of a proper word in place of *book*, when condensing for the printer the seven original chapters. He must decline the invitation of Mr. Frame for "a real discussion of the function of the minister and the nature of his method before plunging into a critique of the methods and work of existing seminaries." *A priori* discussions of such problems do not offer attraction, and besides, fossilized seminarians can be found who already are dogmatically certain of that function and method. It is somewhat surprising to the author that a message smacking suspiciously of that old, traditional hostility of theologians to the investigation of religious problems should emanate from a seminary so progressive as the Union Theological Seminary. The writer even contemplates embodying the whole of Mr. Frame's review in his book as an interesting modern illustration of the survival in high places of a certain well-known attitude of mind that has sometimes characterized theologians in the ancient conflict of ecclesiasticism and science.

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SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

A JOINT meeting with the New York Branch of the American Psychological Association occurred on February 22, 1909. An afternoon session was held in the Psychological Laboratory of Columbia University, and, after dinner at the Faculty Club of this university, an evening session was held at the American Museum of Natural History. The scientific program was as follows:

Professor Edward L. Thorndike, speaking on the "Correlation of Sensory Discrimination and Intellect," reported measurements of the relation of (1) the factor common to accuracy in drawing lines and making up weights, to (2) the factor common to efficiency in scholarship and ability to gain a high rating for intellect from fellow pupils and teachers. This was found to be, not 1.00, as stated by Spearman (1904), but between 0.17 and 0.30. Other facts were given contradicting that author's hypothesis that whatever community there is between mental functions is due to one same core of identity present in all.

Professor T. L. Bolton reported "Some Observations with the Tapping Test." These observations were made to determine the value of different lengths of rest between successive trials with the tapping apparatus, and also to discover the effect of different pauses upon the daily practise gain in a series of tests. Five trials at tapping were taken with five, ten, and twenty seconds rest between successive trials; both hands were used and the tests were continued for twelve to sixteen days with the three reagents and two classes of students of thirty each. The rest pauses for five successive trials were favorable to the amount of work in the order of twenty, ten, and five. The right hand responded more favorably than the left. The average daily gain was greater for trials with five seconds rest than for ten or twenty. The amount of practise gain seems to depend upon the amount of fatigue which the work engenders. The practise gain for the second half of the tests was greater than for the first half, which seems to mean that practise at first consists in overcoming the inhibiting effects of fatigue. The fact that the five-second rest shows a greater average daily gain than the ten or twenty would seem to indicate that in a long series the five seconds rest must prove the more favorable to work. When use is made of this test to make comparisons between high and low types of intellect and of normal with abnormal subjects, account must be taken of the degree of practise efficiency in which the normal class of subjects finds itself. Professor Kraepelin's proposition that comparisons must be made between the various rates of practise gain or loss seems to hold good. (These observations were taken and collated by Miss Batty, of the University of Nebraska.)

Professor Robert MacDougall presented a paper on "An Application of the Concept of Space Dimension to Experience in Time." Experience in time is sometimes illustrated by the form of one-dimensional space. The latter concept involves, directly or indirectly, such implications as motion in a right line; modification in the rate of such motion and reversibility in its direction; the determinateness of each point in the system, and continuity of direction

among all pairs of points. The paper was concerned with the development of some of the consequences which would follow from applying this spatial conception to human experience.

Free motion, projected in terms of time, would make any point of past or future realizable at will; while the conditions of a right line require that each intervening event find place in the series by which that point is reached. Modification of rate appears in intensive variations of experience as well as in primary acceleration or retardation. Reversal of direction calls for a change in the affective sign of experience. The conception of a right line requires a deterministic theory of conduct, but the relation of each new point to the direction of the preceding series represents the sense of inner consistency, or subjective free-will. The form of experience in time thus realizes, in part, the requirements of the spatial conception, but, in part, its order radically departs therefrom.

Professor D. S. Miller spoke on "The Knowledge of Temperament from Within and from Without." In every-day life there are two ways of alluding to a man's knowledge of himself; favorable and unfavorable. We say "only the man himself can answer that question,"—some question about his motives or thoughts; on the other hand, we say "that it would be well if a man could see himself as others see him." To these two attitudes there correspond a philosophical theory and a psychological theory. The philosophical theory is that in the case of consciousness, appearance and reality coincide: therefore everybody is by the nature of the case acquainted with the contents of his present consciousness. The psychological theory (set forth by Mr. Santayana) is that it is instinct and habit, the constitutional, which determines a man's action and forms his nature; that these can better be observed by the external spectator; that the play of consciousness matters little in comparison.

As regards all these it is clear that the philosophical theory is right. A man is acquainted with the contents of his consciousness. But the important thing in knowing his temperament is not what his consciousness is at any moment, but what further consciousness and what acts it will lead to. Thus a man is acquainted with his consciousness, but generally fails to "know himself."

As for the psychological theory, it can not be true that consciousness matters nothing, or even matters little. All consciousness is "impulsive," or motor. All consciousness is, therefore, a force toward action. Consciousness which is prevented by circumstances or stronger impulses from being realized is still a force, though a defeated and buried force. Were the circumstances changed or the paramount impulses altered, the defeated consciousness would have its way. Thus a person who knows his consciousness knows real

forces making for action. A person may also observe his own acts and life as truly as an external spectator may observe them.

The conclusion is, then, that as between the observer from within and the observer from without it is the inner observer who can see everything. The difficulty for him lies in the many false emphases of consciousness. It is a difficult art for the inner observer really to read the prognostic signs of his consciousness and acts. The advantage of the outer observer is in simplification; all the baffled forces are omitted from his view. But on that very account the outer observer lacks the full material for judgment. It is the inner observer who has them all, could he but master the art of reading the tokens correctly.

A discussion on the "Concept of a Sensation" was opened by Professor John Dewey, who distinguished the following meanings of the term:

1. The anatomical—for so it must be called—according to which the sense organ and its central connections are thought of as if dissected out, isolated from the rest of the system, and acting alone. The isolation is unreal; the activity of any part is interlinked with simultaneous activities in other parts, and preceding and following activities in the same and other parts. There is never a state of rest, which might serve to isolate the subsequent activity, but everything is really a process of readjustment throughout the system.

2. The physiological or biological conception of a sensori-motor reaction, as frequently stated, is subject to the same criticism: the reaction is not isolated, nor is the stimulus exclusively peripheral, for the existing condition of the central organs is part cause of the reaction, and this reaction helps determine the stimulus finally operative.

3. A sensation is often conceived in psychology as a "sensory quality," and these qualities are assumed to be primitive and to correspond with elementary processes in the sense organs. This is a good deal of an assumption, since the qualities are known to us only as the apex of a whole system of physiological functioning. We see the color of an object rather than the color itself; we do not start with the sensory qualities and build up the object by putting them together, but we begin with the object, and only reach the sensory quality by an elaborate process of differentiation. The sensory quality is a late achievement, not a primary datum. The "elements" of structural psychology are the last terms of intellectual discrimination.

4. The sensory qualities—as equivalent to Locke's simple ideas —are thought of as the units of knowledge, as the irreducible mini-

mum which can not be torn off by any amount of criticism of the percept. Locke, however, does not mean, nor would it be true, that all apparent knowledge is made up of single ideas. He was interested not in tracing the genetic psychology of knowledge, but in providing a logical device for testing knowledge and for appealing against prejudice, dogma, and authority. His sensations were not elements of composition, but ultimate, and hence elementary, criteria and tests of assurance.

5. The every-day use of the term sensation is illustrated by the phrase "sensational newspaper." Here the sensation is not an element, but a total concrete experience, the essential fact about which is that it is a shock, an interruption of an adjustment which had been running smoothly. While the "sensory qualities" are thoroughly objective, these shock experiences have the true subjective quality, since they have, for the instant, no meaning or objective reference. Their character as sensations is exhausted by this absence of reference; there is but one true sensory quality—the quality of shock. From the point of view of logic, the shock experience is valuable, since a state of suspended reference is the basis of the inductive method. Dogmatism, on the contrary, consists in the prompt interpretation of every new shock into terms of some well-established habit. In its true sense, the mental state, or the subjective, is the conscious starting-point of a qualitatively new habit.

Professor F. J. E. Woodbridge, in following up the discussion, first distinguished two meanings of the term sensation: (1) a reaction of the organism by means of the sense organs; and (2) the sensory qualities of objects. These meanings do not lead to confusion. The confusion arises when we pass to epistemology, and inquire into the relation between the sensation and the thing sensed. We first distinguish between the organism and its environment, and then ask at what particular point the sensation arises. We find it impossible to fix the point, and are driven to conclude either that there is no sensation, or that all is sensation—conclusions which virtually coincide, since they both leave no meaning to the term. It is clear from this that the term should be banished from epistemology and limited to the empirical uses mentioned above.

Professor W. P. Montague offered the following objections to the destructive criticisms of Professor Dewey. Though a sensation does not occur in isolation, yet every perceptual experience has a distinguishable sensory side. We have the same right to distinguish it as we have to distinguish the form and the color of objects, which also never occur in isolation from each other. There is this objection to regarding the sensory qualities as the apex of a long process of development: that, instead of being complex, they seem to be simple in

their nature and their external causes seem to be simple processes. It is likely that to simple processes in the external world should correspond simple effects in the organism, such correspondence being relatively independent of evolutionary development. It is also true that the shock experience arises very often from stimuli which are simple, so that there is reason for relating the experience of shock to the sensory qualities, as is done in the conventional use of the term sensation to cover both sorts of fact. The speaker also called attention to a metaphysically puzzling feature of sensation, namely, its "specious present," or seeming occupancy of a segment of past time at each moment of its existence; but this, he thought, was accounted for in the concept of sensation as a form of potential energy into which the kinetic energy of the neural current is transformed at the moment of its redirection in the central nervous system, or even at the moments of its transit through all the various synapses traversed by it.

Professor R. S. Woodworth advanced the concept of sensory as distinguished from perceptual centers in the cortex, the sensory centers being those which first received the incoming stimuli from the sense organs. According to this neurological conception, there should be a difference in time between the sensation and the percept, but it must be admitted that it is usually impossible to detect, introspectively, an interval between the first reception of the stimulus and the percept of some object, or process. This introspective difficulty has led Professor Pillsbury, in a recent and still unpublished lecture, to the conclusion that there is nothing in consciousness except meanings. From this point of view, it would be honest to give up the concept of sensation in psychology, and to speak simply of the stimulus and of the percept. Though these two would be sufficient for most instances of perception, there remain certain objections to giving up the concept of sensation altogether. There are the pathological cases, in which perception is lost, though sensation remains. There are the shock experiences, in which there is an interval between the first consciousness of the stimulus and the consciousness of its meaning. And there are ambiguous stimuli, like the staircase figure, where, in spite of the alternating percepts, there persists throughout the experience an irreducible conscious minimum, which may best be called sensation.

Professor T. L. Bolton inferred, from observations upon animals at certain moments, that they distinguish by their bodily attitudes and general conduct differences between the various objects of their environments that have practical bearings for their lives. The attitude assumed in the presence of the object is characteristic of the object. A similar phenomenon may be observed in human beings.

This is the fundamental fact in perception, which becomes the feeling of these bodily attitudes that are evoked by an object's presence. Again, we see both animals and human beings acting in the same manner upon objects alike in some respect, but very different in others. This likeness is the objective stimulus for, let us say, a sensation of color. Here then is an activity that is characteristic of the objective stimulus of sensation. This resolves the sensation into essentially the same thing as the perception. In the case of the conventional sensation, the stimulus is merely a part of the objective thing which is present and which, in its totality, might elicit an attitude of the kind which we have called perceptual. The sensation and perception both become the feelings of bodily conduct. In perception the whole object is effective in evoking the attitude. The difference is, then, one not in the mental effect, but rather in the part of the objective fact that is operative in exciting reactions. They are alike in being mental states of bodily changes, and neither is the direct effect of incoming afferent currents.

R. S. WOODWORTH,
Secretary.

REVIEWS AND ABSTRACTS OF LITERATURE

Einführung in die Philosophie. RAOUL RICHTER. Leipzig: B. G. Teubner, 1907. Pp. 128.

Six lectures on the problems of knowledge, reality, and religious and ethical value make up this little book. Of these lectures, the first deals with the nature of philosophy; the second, with the concept of knowledge, and the third, with its object, degrees, and limits; the fourth treats of the metaphysical nature of reality, and the fifth, of its final unity; the sixth examines the nature of religious and ethical value.

In general the author stands for the sharp separation and mutual independence of knowledge and value, for the priority of epistemology, for the idealistic nature of reality and pantheism as the expression of its final unity, and for the individual as the source of determination of all values.

Philosophy is a struggle, no final attainment. It is a struggle after knowledge, the knowledge of the real, whether factual merely or worthful. Its test is satisfaction of the demands of the intellect, not of heart and feeling. The knowledge it seeks is that of the total system of reality. It is neither a mechanical summary of the various sciences nor a substitute for any or all of them. The business of philosophy is critically to examine the presuppositions of the various sciences, and on the basis of their special laws to discover the universal. Religion is to be distinguished from philosophy in that the former is the reaction of feeling and will to the total system of reality as revealed by the latter. But the

world-view does not necessarily determine the world-evaluation. Were our knowing functions freed from their limitations, there would be but one philosophy, but there would probably be many reactions, many religious attitudes, to the nature of reality so revealed.

A criticism of knowledge must be undertaken before the knowing functions are applied to the problem of the ultimate nature of reality. Philosophy deals with the fundamental assumptions and most general results of the special sciences. As stated, these are in most cases shot through with unrecognized, false, or half-true assumptions regarding the nature of knowledge and the knowing functions. Furthermore, the object with which philosophy deals is no less than the total system of reality. The fundamental disagreement between philosophers as to central problems shows that there must be limitations in our knowing functions in reference to such an object.

The term "truth" is applicable not to mere existents, whether physical or mental, not to isolated or connected contents, but to the connection of mental contents as established in the judging process of a conscious individual. The marks of a true judging process are: the feeling of conviction, harmony with thought and experience, self-conscious clearness of the connection of the mental contents and of their harmony with thought and experience, and the agreement of all subjects. Since the existence of other conscious subjects besides the judging consciousness is neither a matter of immediate experience nor a thought necessity of that judging consciousness, the last point strictly reduces to a special case of the second, harmony with experience, reference being made to that portion of experience usually designated as expressions of assent from others.

Richter takes as illustrations of true judgments the propositions of formal logic and mathematics, which he calls subjective, and statements of immediate experience, such as "in this room a light is burning" and "I trace pleasure on the faces of the audience," which he calls objective.

Judgments as to causal connections within experience, such as that acid turns litmus paper red, have only probability, not truth, and command a lower grade of conviction. A third and still lower degree of knowledge and belief accrues to judgments concerning that which is by nature beyond experience, *e. g.*, the ultimate nature of the litmus paper when unperceived.

The judgments of mathematics and logic are mutually characterized by the inconceivability of the opposite and by absolute universality. They are distinguished in that the former are "synthetic" and the latter merely "analytic." Richter has emphasized the necessity of taking judgment as a process, but one wonders how significant that emphasis may be when the "process" may typically consist of the mere repetition of the subject in the predicate. If a live judging process be intended and if by "harmony with thought" a reference to other judging processes be involved, it would seem that causation would be necessarily implicated in the process. If an experience be one thing and the judgment about it another, there would seem to be room for error, and the test of

"harmony with experience" would involve, again, the belief in causation and a reference to a series of checks. On the above assumptions, the absolute rigidity of the distinction between the first two classes would thus be in question. Otherwise, the first class would seem to approach the vanishing-point and hardly deserve to be taken as representative of the meaning of the term truth.

Truth involves a judging process, an event in time, but a judgment once true is always true. If it is once in harmony with thought and experience, according to Richter, it can never be contradicted by either. The growth of knowledge affects error only, not truth. Truth is not a matter of connection between conscious experience and something outside of it. It is relative to the conscious subject and has to do with relations within his experience, but, as said above, the true connection once formed is eternal. If "harmony with thought and experience" includes harmony with all future thought and experience, this absolute truth within experience would not seem to possess surpassing advantage over the absolute truth of the supra-experiential type.

The third and lowest type of knowledge and belief has to do, as stated above, with the existence and nature of the noumenal, or extra-experiential world, nature, God, the soul. Proof of the existence of the object or of its non-existence is impossible here. The tests are consistency with thought, lack of inconsistency with experience, positive explanation of experience by assumptions as simple as possible and as closely related to experience as possible.

Are there objects corresponding to my sense-perceptions and independent of them? Are such objects themselves inner experiences, or not? Precisely what is their real nature? For extreme realism independent objects exist, and their nature is exactly what it appears to be in sense-perception. For extreme idealism there are no independent objects. For moderate realism independent objects exist, but only with the temporo-spatial, not the qualitative characteristics of our sense experience. For moderate idealism independent objects exist, but they are either of the nature of our inner experience or of an inexperienceable nature. In criticism of this division one might suggest that it would be simpler to divide first on the basis of independence of the given sense experience, and then as to the nature of the object. Closely connected with this question of the object in sense perception is that of the nature of the ultimate elements of reality. As Richter treats this problem, the actual division is made not so much on the basis of content as of causality. Materialism reduces consciousness to a form or function of matter. Spiritualism looks upon matter as a product of thought. Dualism recognizes them as of coordinate character, and monism, neutralism, views them as expressions of a higher and single nature. The four forms of philosophy just mentioned are realistic. On the idealistic basis there are three forms: solipsism, polypsychism and panpsychism.

On the basis of lack of harmony with thought or with experience, or of lack of simplicity, or of close analogy with experience, Richter eliminates

the first six of these solutions and chooses panpsychism as the least objectionable. Sense-perceptions arise from the interaction of conscious subjects. The body is one psychical unity, the soul another. The soul is not a substance, but a symphony of processes, and of "inner" rather than "outer" experiences. If no hard and fast line can be drawn between "inner" and "outer" experience, it is difficult to see how interactions of two or more systems of inner experiences suffice to produce sense-perception. Richter gives no criterion for individuality in sense-perception.

For Richter, no philosophic sin is greater than to allow one's own heart's demands or those of the race to influence the results of our thinking, and yet he comes out strongly for voluntarism. The primacy of will and feelings over intellect is not merely a mattter of temporal origin, but of actual relationship. Will and feeling make use of intellect merely as a tool in carrying out their purposes. Richter gives no discussion of this apparent conflict, nor any detailed analysis of the intimate relations of these processes in concrete cases. In practise, the work of the will seems to consist in setting the intellectual processes to work *en bloc* and then in reacting in some way to the final product, not in any sense determining it.

The stuff or reality is, then, consciousness, and the latter is essentially of a volitional character. Two questions concerning its nature remain. What sort of laws does this material exhibit in its behavior, mechanical or teleological? Is there an ultimate unity, and, if so, what is its nature? The question concerning the laws is not discussed. Atheism, theism, and pantheism are the possible solutions of the second question. The existence of God is given neither as a matter of thought necessity nor as a fact of experience. It is a metaphysical problem. In his discussion of pantheism, Richter recognizes as one form of it the view that God is an unfinished, developing organism in whose upbuilding we may have a part. He includes under atheism the view of the world as an unending evolution or ascent into higher forms, but without a final aim toward which the process is directed. Apparently, then, in the form of pantheism mentioned, the aim is already laid down, and the growth process is merely one of accretion. It would appear also that some forms of pragmatism would be classed as atheism on this basis. Richter adopts as his own view a form of pantheism in which God, the final unity, is conceived not as the totality of things, complete or incomplete, nor as a giant organism, but as the eternally upspringing source of all that exists. "Gott . . . ist nicht Umkreis, sondern Mittelpunkt in der Wirklichkeit." This, then, seems to be a qualitative rather than a quantitative matter after all, and if so, one questions why no room should be found for God within experience.

Value is a matter of volition or feeling, and so presupposes a conscious subject. Religious and ethical values are found in volitional reactions to the presented object. Religious valuation is this reaction directed at the final unity of things, whereas ethical valuation is concerned with the minor phases of reality. There is no universality in either ends or means. The only universal thing is that, if the end is willed, the means must be

also. The ethical situation consists in a conflict of our deep-lying and our superficial wills or natures. The practical problem is to avoid mere imitations, to find out our true nature and let it be dominant.

Schopenhauer and Nietzsche bear witness to the fact that religious attitudes, optimism, and pessimism, are not mechanically determined by metaphysical views, but are matters of individual reaction.

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Nicolas de Béguelin. Fragment de l'histoire des idées philosophiques en Allemagne dans la seconde moitié du XVIII^me^ siècle. PAUL DUMONT. Paris: Felix Alcan. 1908. Pp. 210.

Nicolas de Béguelin is one of the minor philosophers of the uninteresting period which extended from 1754, the year of Wolff's death, until 1781, the year of the publication of the "Critique of Pure Reason." He was born in 1714, in Courtelary, French Switzerland, but spent his life as a scholar in Berlin; there, with Merian and Sulzer (the esthetician) he formed the Swiss trio famous in the annals of the Académie Royale de Berlin at that time. His independence of character brought about some trouble with Frederic the Great; still, at the end of his life he reached the honorable position of "Directeur de la classe de philosophie" of the Académie. He wrote no large work, but a great number of *mémoires,* all published in the *Annales of the Académie* between 1750 and 1787. He was somewhat of a poet. He did his most solid research work in the domains of mathematics and physics (d'Alembert spoke highly of him), and his most original work in the domain of metaphysics.

His philosophy is inspired chiefly by Leibnitz, Wolff, Newton, Locke and Reid.

He was a man of extremely peaceful disposition in his thought; whatever originality is found in his writings is in his attempts to conciliate the dissenting views of the above-named philosophers.

The author of the book under consideration, M. Dumont (1908), has very conscientiously reflected those various attempts. One might wish that he had been, perhaps, less exclusively objective, and that he had pointed out of what interest the ideas of such a man as Béguelin can be for the student of the history of philosophy. Béguelin treats almost everything from a metaphysical standpoint, and we have seldom been given the occasion to realize so well the remarkable advance which was made possible in philosophy, thanks to the work of Hume and Kant; the vanity of old-time metaphysics appears here so evident that no better object-lesson could be offered to a student than a few examples from the philosophy of which Béguelin is so typical a representative. For instance, the problem was to reconcile the theories of the Newtonians, who believed in the existence of a vacuum in space, and of Leibnitz, who did not. Béguelin agreed that in discussing the problem on the grounds of physics both had such strong arguments in their favor that nothing could be done to bring about a reconciliation; but on metaphysical grounds he thought the case was not so hopeless. The Newtonions admitted the exist-

ence of a vacuum in the universe, because their reason could not conceive of the possibility of motion in *plenum;* while Leibnitz thought that the principle of sufficient reason required the non-existence of a vacuum. Now Béguelin simply proposes to distinguish between a physical vacuum and a metaphysical vacuum; both Leibnitz and Newton could accept the existence of a physical vacuum; at the same time both Newton and Leibnitz could agree that a metaphysical vacuum could not exist, as contrary to God's "loi suprême de convenance"; thus, the vacuum (physical) exists, and the vacuum (metaphysical) does not exist.

The whole philosophy of Béguelin practically consists of such "conciliations." Whether, in physics, he discusses the true cause of weight, impulsion according to Leibnitz, attraction according to Newton (p. 56); or whether the origin of motion is emission, according to Newton, or pression and undulation, according to Leibnitz; or whether, taking up logic, he arbitrates between the same two men as to the essence and bearing of the principle of sufficient reason (p. 71), or between Leibnitz and Locke as to the empirical or innate origin of the same principle of sufficient reason (pp. 75–8), or between Leibnitz, the determinist according to the theory of the "monads," and Leibnitz, the free-willist according to the "Théodicée" (pp. 82, 118); or, again, when he proposes his own theory of the "unités de la nature" to mediate between the cosmology of Wolff, with his physical "*atomi naturæ*" leading to a dualism of matter and mind, and that of Leibnitz, who, with his "monadology," divides matter *ad infinitum* into forces that are neither physical nor spiritual (p. 101) (not to speak of the questions directly and indirectly related to that one, as "apperception" or "appetition"); or whether the problem before him is the difference between human and animal mind (p. 117) or the relations of body and mind, Leibnitz proposing preestablished harmony, and Wolff maintaining that there is interaction, while Béguelin suggests that, matter and mind being not "essentially" different, there is no real problem to solve (p. 122); or whether the source of our knowledge is inneity (Leibnitz), or sensation (Locke); or, finally, when he takes up the discussion of the agreement between reason and faith (pp. 130 ff.), between free will and divine prescience (p. 130), between morality of duty (Leibnitz) and morality of happiness, or eudaimonism (Locke) (pp. 144 ff.)—it is always and ever the same tendency to make every one agree with everybody else. He believes with Leibnitz: "les systèmes ont raison dans ce qu'ils affirment, et tort dans ce qu'ils nient." Even in his methods, Béguelin is in turn favorable to aprioristic methods and to empirical methods; although, in the latter case, he shows always fear of losing contact with metaphysics. Reid's theories of "common sense" constitute for him a most valuable instrument in his generous effort to conciliate everything; and when it comes to reconciling the data of common sense with those of pure reason, Béguelin formulates philosophical principles which bear a very striking resemblance to those of modern pragmatists. Whoever is interested in pragmatism ought to read pages 94 and 98 of Dumont's book.

Nothing shows better than this need of adaptation and mediation and reconciliation everywhere, how shaky the whole edifice of philosophy was at that time, and how circumstances called imperatively for a man who would start thinkers on a new path: Kant.

The chapter on the relations of Béguelin with the principal men of the Académie Royale of Berlin is neither very interesting nor very important, but that on Béguelin and Kant is the one which shows best the critical abilities of Dumont.

In fine, I should say that the book is by no means worthless. Béguelin's philosophy has hardly much value in itself, but as illustrating the spirit of a period it is worth studying. A small philosopher reflects just as faithfully as a great thinker his own time; only he reflects it more naïvely.

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The Limits of Educability in Paramecium. STEVENSON SMITH. *The Journal of Comparative Neurology and Psychology,* 1908, Vol. XVIII., No. 5.

Students of comparative psychology will welcome this excellent piece of experimentation as a real contribution to the field of adaptive behavior of microorganisms. It is argued here that careful animal studies reveal an adaptive phylogenetic development from unicellular organisms upwards without involving consciousness in the description. Even memory, which has been held by some to be a conscious adaptation, may involve no consciousness whatever, even though it may possess for the organism strong selective qualities. Inorganic manifolds portray some of the same memory characters that we find in the organic.

An adaptive behavior in organisms must develop of necessity if the ordinary laws of evolution are granted. It is true that we have memory here, but there is no evidence that it is conscious.

The criterion of consciousness assumed by Morgan and others, namely, that the organism shall be able to profit by past experience, is rejected by Professor Smith as being inadequate on the ground that much profit by experience in man is not at all a conscious adaptation. For example, muscular adaptation which is profitable to new conditions does not make the muscle a "conscious mechanism," but is simply the establishment in it of more ready reactive tendencies. Aside from the development of facility, there is the acquirement of selective movements by animals. This may be explained by the selection of overproduced movements, and the author offers a formula describing this selection in terms of chance and habit.

The teleological aspect of vital reactions has led some speculators to fix upon regulation as the criterion of consciousness, involving, as it usually does, choice of conditions. But upon analysis it is shown that "we may call behavior regulatory when a process having proceeded too far is the cause of its own remedy." In demonstration of this, certain examples are given of regulation in the field of inorganic manifolds. The regulation of living things differs from inorganic self-regulatory actions

in that after the action is completed, the reversion to the normal state in the former is more perfect, which renders the organism ready at once for a fresh corrective adaptation, should the need arise. This definition becomes at once a contribution, as the outline of an adequate description of regulatory behavior is suggested which involves no super-organic terms.

The experiments cited in this paper were made upon paramecium to determine the character of the modifiability of action when recurring stimuli of the same kind were given. They fall into three groups: (1) Those in which the animal was stimulated by touch (the meniscus of a capillary tube), the conditions being such that it could react in but two ways in order to escape. (2) Those in which the animal was stimulated by change in temperature. (3) Those in which the animal was frequently made to experience two conditions, which at first occurred simultaneously, and later made to experience one alone, any difference being noted between the reactions to the first and the second conditions.

These experiments seem to have been performed with great care and accuracy. In the first experiment the animal was placed in a capillary tube of a bore less than the length of the paramecium and greater than its width. In time the animal acquires the ability to twist around and to reverse its direction in the tube. This aptitude, under optimum conditions, progresses until the paramecium may reduce the time for making the turn from four or five minutes to a couple of seconds. The second and third groups of experiments, which were performed as a test for associative memory, gave entirely negative results.

In conclusion the author says: "Paramecium is educable in that its behavior may be modified to show the results of practise, both in a reduction of the time involved in performing a movement and in the increase in suitability of the movement to accomplish the appropriate result. In so far as the above tests apply, there is no evidence of associative memory in paramecium. The reversing movement above described is in the nature of a positive reaction."

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. March, 1909. *Naturalisme, humanisme et philosophie des valeurs* (pp. 225–255): A. CHIAPPELLI. – Modern philosophy exhibits a great Idealistic regeneration in which philosophy is differentiating itself from science, not by degree of generality, but by a difference of its object—an historical conception of universal nature, at once ideal and evaluative. *L'antipathie dans ses rapports avec le charactère* (pp. 156–275): L. DUGAS. – A development of Ribot's idea that antipathy is a form of the instinct of self-preservation. *L'idée de dieu et le principe d'assimilation intellectuelle* pp. (276–284): A. LALANDE. – A criticism of a paper by M. Belot on *La triple origine de l'idée de dieu* in the December number of this JOURNAL. *Revue générale. Philosophie du*

Droit: la contrainte sociale et la valeur du droit subjectif, G. RICHARD. *Notices bibliographiques.* H. Maier, *Psychologie des émotionalen Denkens:* M. SOLOVINE. H. Marty, *Untersuchungen zur Grundlegung der Grammatik:* B. BOURDON. Urban, *The Application of Statistical Methods to Psychophysics:* B. BOURDON. Ossip Lourié, *Croyance religieuse et croyance intellectuelle:* L. ARRÉAT. Benett, *The Ethical Aspects of Evolution:* G.-L. DUPRAT. Schlesinger, *Der Begriff des Ideals:* L. ARRÉAT. Pascal, *Œuvres complètes, t. II et III:* L. ARRÉAT. Rzewuski, *L'optimisme de Schopenhauer:* L. ARRÉAT. Kowalewski, *Schopenhauer und seine Weltanschauung:* L. ARRÉAT. Schelling, *Werke:* J. SEGOND. Schelling. *Sistema dell' idealismo transcendentale:* J. SEGOND. *Revue des périodiques.*

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NOTES AND NEWS

THE following obituary notice of James Hutchinson Stirling is from *The London Times:* "Serious students of philosophy and the philosophical aspects of theology will learn with regret of the death from acute pneumonia of the veteran metaphysician Dr. James Hutchinson Stirling, which occurred at his residence at Trinity, near Edinburgh yesterday morning. He had been in failing health for some time, but his mind remained clear to the end. About six weeks ago he was visited by Emeritus-Professor Campbell Fraser, who is now in his ninetieth year. Born in Glasgow on June 22, 1820, he began to attend the winter classes at Glasgow University in 1833, and completed the course in arts and medicine in 1842, in which year he became a licentiate of the Royal College of Surgeons, Edinburgh. He early showed a remarkable aptitude for logical and metaphysical inquiries, and in 1838, at the suggestion of the moral philosophy professor, Dr. Fleming, made trial of his critical powers by a thesis in examination of St. Anselm's *a priori* argument for theism, which he had then no hesitation in pronouncing a mere sophism, though he lived to regard it as 'the first word of modern philosophy.' He also distinguished himself in chemistry and dabbled in literature. In 1842 he sent one of his poems to Carlyle, who dipped into it here and there, pronounced it unpublishable, and advised him to stick to medicine. For some years he followed the advice, settling in 1843 at Hirwain, Glamorganshire, whence he removed to Glyn Neath, in the same county. Meanwhile he contributed a few trifles in prose and verse to *Douglas Jerrold's Magazine, Leigh Hunt's Journal,* and other periodicals. These fugitive pieces, which attest the soundness of Carlyle's judgment, appeared in collective form, with an

imaginary dialogue in which Burns is the chief speaker, under the title 'Burns in Drama, together with Saved Leaves,' Edinburgh, 1878, 8vo. In 1851 Stirling retired from practise and went abroad. For nearly two years he resided in Paris, studying chemistry under Dumas, toxicology under Orfila, physiology under Milne Edwards, and French literature under Ampère. Migrating to Germany about 1854, he devoted himself to the serious study of transcendentalism, particularly of Kant and Hegel. He resided at Heidelberg, and attended the lectures of Schenkel, but formed independent philosophical views. He also visited Bonn and Stuttgart, and returned to this country in 1857. Having, as he believed, penetrated into the inmost spirit of the Hegelian philosophy, and seen the idea rise from the Kantian categories like Venus from the sea, Stirling desired his countrymen to share the same august vision. He settled accordingly in Edinburgh, and, while engaged in casting the results of his German studies into shape, submitted the philosophy of Sir William Hamilton, which then lay like an incubus on the North British mind, to the critical scalpel. The result was a volume of strictures, no less damaging than those of John Stuart Mill, and published in the same year (1865) under the title 'Sir William Hamilton; being the Philosophy of Perception, an Analysis' (London, 8vo). His principal work, also published in 1865, 'The Secret of Hegel' (London, two vols., 8vo), hardly fulfilled the promise of the title, but did much to correct prevalent misconceptions. (A new edition came out in 1898.) It was followed in 1881 by one which should in logic have preceded it—viz., 'Text-book to Kant: The Critique of Pure Reason' (Edinburgh, 8vo)—a work intended to exhibit the affiliation of the Hegelian to the Kantian system, and condensing the results of many years of intense study. The value of both works is seriously impaired by the uncouth mannerism of their style. In 1889–90 Stirling delivered the first course of lectures in Edinburgh on the Gifford Foundation, in which, with much discursiveness and multifarious learning, not all of it relevant, he weighed the arguments for and against theism. They were published under the title 'Philosophy and Theology' (Edinburgh, 1890, 8vo). In 1894 appeared his 'Darwinianism: Workmen and Work' (Edinburgh, 8vo), an investigation into the origin of the 'Origin of Species.' Stirling also translated and annotated a valuable text-book —Schwegler's 'History of Philosophy'—of which a twelfth edition appeared in 1893, and published, among other lectures, a course on 'The Philosophy of Law,' delivered before the Juridical Society of Edinburgh in November, 1871. His latest published volumes were: 'What is Thought, or The Problem of Philosophy: by way of a General Conclusion so far,' 1900; and 'The Categories,' 1903. The University of Edinburgh conferred upon Stirling the degree of LL.D. in 1867, and the Philosophical Society of Berlin elected him a foreign member in 1872. He was also created later an honorary LL.D. of Glasgow University. He stood for the chair of Moral Philosophy at Edinburgh in 1868, and is said never to have quite forgiven the university for preferring Dr. Calderwood. In politics he was a strong Tory; in theology his views were supposed to be broad, but he always considered himself a member of the Kirk, and maintained

the incompatibility of the Christian faith with the Hegelian philosophy. He was an omnivorous reader and a precocious conversationalist."

THE Association of Teachers of Psychology in the Colleges and Normal School of the North Central States met on April 3 at the University of Chicago, with the following program: "Simplifying the Introductory Course in Psychology": Rowland Haynes; "The Value of Psychology to the Teacher": Miss Hazel Ackley; "The Course in Psychology for the Rural Teacher": Mrs. L. Pitmann; "Teaching the Organic Conception in the Introductory Course": J. B. Miner; "A Device by which Physiological Concepts may be Employed in Teaching Psychological Processes": N. A. Harvey; "Conflicting Ideals in the Teaching of Psychology": James Rowland Angell; "The Written Recitation and the Participating Demonstration": Carl E. Seashore; "Relearning an Act of Skill": Edgar James Swift; "Art and Conduct": Miss Kate Gordon; "The Value of Social Psychology": E. L. Talbert; "Elementary Psychology and the Elementary Teacher": Walter S. Athearn; "A Course of Applied Psychology for School Teachers": Frank C. Bruner; "Social Psychology": Charles H. Judd.

THE *Popular Science Monthly* for April is devoted entirely to Darwin. The contents are as follows: "Life and Works of Darwin": Dr. Henry Fairfield Osborn; "The Individuality of Charles Darwin": Charles F. Cox; "Darwin and Geology": Professor John James Stevenson; "Darwin and Botany": Dr. Nathaniel Lord Britton; "Darwin and Zoology": Dr. Herman C. Bumpus; "For Darwin": Professor T. H. Morgan; "Predarwinian and Postdarwinian Biology": Professor William Morton Wheeler; "The Halo of a Hundred Years": Professor R. M. Wenley; "The Origin of the Theory of Natural Selection": Dr. Alfred Russell Wallace; "The First Presentation of the Theory of Natural Selection": Sir Joseph Hooker; "The Progress of Science": Darwin Manuscripts: Portraits of Darwin: Celebrations in Honor of Darwin.

RUDOLF EUCKEN'S "*Die Lebensanschauungen der grossen Denker*," etc., will shortly appear in English translation under the title "The Problem of Human Life as Viewed by the Great Thinkers from Plato to the Present Time." The translators are Professor Williston S. Hough, of The George Washington University, and W. R. Boyce Gibson, of the University of London. Professor Eucken was awarded the Nobel Prize for Literature last year, and the above work is his best known and most popular book.

THE Oxford University Press announces for spring publication Hobbes's "Leviathan," edited by W. G. Pogson Smith; "Plato's Theory of Ideas," by J. A. Stewart; "Theophrastus," edited by H. Diels; and "Aristotle's Criticism of Plato," by J. M. Watson.

PROFESSOR SIMON SOMERVILLE LAURIE, of the University of Edinburgh, died on March 2, at the age of seventy-nine years. Professor Laurie was known for his writing in the fields both of education and of general philosophy.